Amendments to the Specification

[0001] This application is related to application [Ser. No. 10/_____] Ser. No. 10/611,845 (Attorney Docket No. GP-303270) entitled "VALVE STRATEGY FOR OPERATING A CONTROLLED AUTO-IGNITION FOUR-STROKE INTERNAL COMBUSTION ENGINE" filed on even date herewith and incorporated herein by reference.

[0020] Figure 4 illustrates an exemplary combustion stability versus intake valve opening phase curve demonstrative of low load limit benefits in accordance with the method of the present [invention.] invention; and,

[0028] Figure 2 is demonstrative of exemplary split-fueling in accordance with certain preferences regarding injection timing. The region delimited by the solid bars labeled 55 and 57 correspond to preferred angular regions within the intake and compression cycles for ~~deliver~~ delivery of the intake cycle fueling event and compression cycle fueling event, respectively. Preferably, the first fraction of fuel is injected about 0 to about 90 degrees after exhaust stroke TDC and the second fraction of fuel is injected about 20 to about 60 degrees before compression stroke TDC. Other regions for injection may be utilized but may not yield as substantial an advantage as the preferred regions.

[0036] The impact of the current invention on the low load limit of the exemplary controlled auto-ignition engine operation is shown in Figure 4. Without using the current invention, the low load limit of the exemplary -- and most typical -- four-stroke direct-injection controlled auto-ignition gasoline engine is around 225 kPa Net Mean Effective Pressure ~~(NMEP)with~~ (NMEP) with 5 % Coefficient of Variation of Indicated Mean Effective Pressure (COV of IMEP) as an indicator. The data plotted in Figure 4 was acquired with leaned out fueling to substantially 175 kPa NMEP and with implementation of the exemplary intake and exhaust valve profiles heretofore described. The plot of line 71

clearly shows combustion stability improvement with the introduction and expansion of low-pressure events within the combustion chamber as described herein. The clear conclusion drawn is that expanding the sub-atmospheric pressure conditions improves combustion stability and allows the engine to be operated at lower load limits.